

## UESC VS. ESPC ENERGY 2003

- Advantages and disadvantages comparison
- Housing Geothermal Project UESC
- Trane Technology Specific Geothermal Super ESPC.
- What will work for you?
- Questions

## UESC ADVANTAGES

- No M&V Plan yields cost reductions
- Must have a positive NPV for 10 year cash flow.
- Can make up for budget short falls.
- Accomplished via local utility company and EFD.

## UESC Disadvantages

- No M&V Plan therefore no extended warrantee.
- Must have a NPV for 10 year cash flow therefore some projects won't work.
- Savings not guaranteed.
- Payments

## ESPC Advantages

- Longer contract durations therefore more project scope can be done.
- M&V Plan requires equipment operational
- Equipment warrantees for duration of contract.
- Savings guaranteed.
- Can make up for budget shortfalls

## ESPC Disadvantages

- M&V Plan adds cost
- More personnel effort required for M&V
- Payments

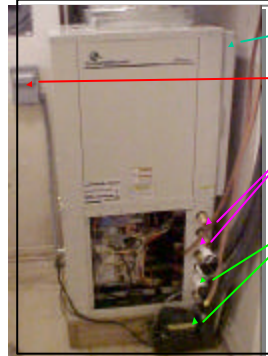
## LAUREL BAY AND PINE GROVE HOUSING UESC

- We looked at ESPC vs. UESC
- We chose UESC with South Carolina Electric and Gas / Co-Energy Group.
- Redundant simple designs.
- Savings were straight forward.
- Natural gas contract had to be terminated.
- Able to get buydown to bring in under 10 years.

## LAUREL BAY AND PINE GROVE HOUSING HVAC

- 1235 Geothermal Heat Pumps are presently operational.
- Designed to maintain 75F and 50% RH with 95F and 80% RH out doors.
- System makes 125F domestic hot water with waste heat from the HVAC unit.
- Calculated energy savings are 34,000 MBTU/year \$880K/year.

## HVAC UNIT INSIDE CLOSET



Filter Housing Access Cover

HVAC Electrical Disconnect

Hot Water Generator Connections

Condensate Line and Condensate Pump



Drilling



Inserting Pipe



U-Bend Piping Inserted



Trenching



### Energy Reduction Progress

- [MCAS Beaufort Energy Reduction Progress](#)
- [Housing Energy Reduction Progress](#)

### ACTUAL SAVINGS DATA TO DATE

- Energy use data has been recorded in an effort to compare before and after installation usage.
- [Actual Savings Data](#)

### TRANE ESPC

- We considered both ESPC and UESC
- ESPC gave us an extended warrantee
- Savings were guaranteed.
- Savings were complicated therefore M&V plan was beneficial.
- We were able to leverage repair dollars into the contract.

## TRANE ESPC

- The EMCS alone would not meet our goals.
- The LTHW system was in need of repair.
- The ESPC will repair the LTHW system in 30 buildings by replacement.
- Geothermal Heat Pumps are much more energy efficient than Boiler Plants, COP of 4 vs. 0.8.
- 1,000 tons of geothermal / 62% of project

## DWINDLING REPAIR DOLLARS

- Facilities ranged from 1950's to 1980s
- Mechanical equipment in need of upgrade
- Funds not readily available for repairs
- Systematic approach difficult to implement

## ADVANTAGES

- Guaranteed annual energy savings.
- A fifteen-year extended warranty all equipment
- Local warranty, maintenance and service support provided by Trane
- Design/Build

## CASH FLOW

- Project implementation price **11,164,377**
- **\$5.2** million avoided cost funds provided by HQMC
- **\$1.1** million buy down provided by Navy Geothermal Fund
- **\$483,270** of annual guaranteed energy savings
- **\$18,957**/year budgeted to warrantee non-Trane equipment

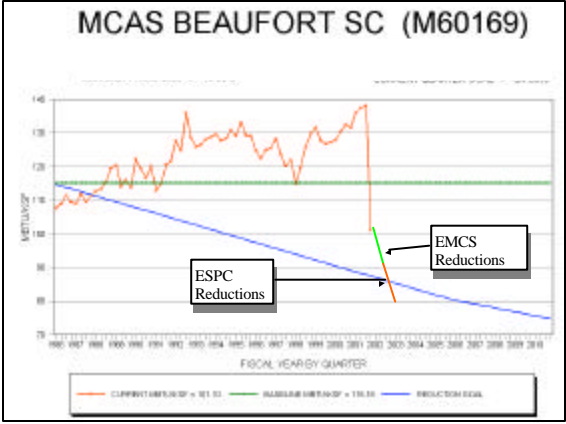
## TECHNOLOGIES USED

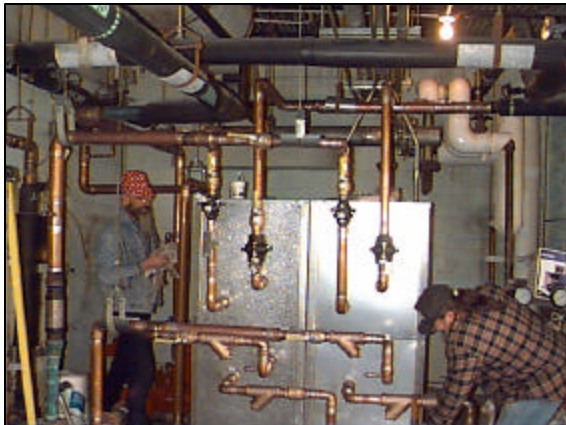
- Seven ECM's used including:
  - Geothermal
  - Building Automation Systems
  - Lighting
  - Building Envelope
  - Motors and Drives
  - Central Utilities
  - General HVAC system upgrades.

## PHASE I BUILDING LIST

BLDG. No.	TYPE	BLDG. No.	Type
1 408	Gymnasium	17 601	HQ
2 414	Hanger Administration	18 611	Armory & storage
3 416	Hanger office	19 612	Warehouse Admin
4 418	Hanger	20 616	CPW Offices
5 431	BQG Lobby	21 618	Transport Admin
6 553	MWR Services	22 625	Public Works Shops
7 555	Storage	23 626	Motor Transit
8 564	NCO Staff Club	24 660	Battalion Squadron
9 565	Field Maintenance	25 661	Vehicle Maintenance
10 566	Chapel	26 662	Storage
11 564	PMO Office	27 707	Family Services
12 585	MAG 31	28 727	Battalion Squadron
13 594	Hanger administration	29 728	Hanger
14 595	Fire & Rescue	30 729	Hanger
15 596	Instrument Training	31 780	Auto Org Shop
16 597	Theatre	32 790	Bowling Alley
17 600	Air Traffic Control	33 843	Vehicle Maintenance







## ESPC Phase II

- Currently under review
- Approximately 10 additional buildings
- Goal is to remove remaining buildings from the central heating plant.
- May provide some co-generation
- 6 man-years of labor savings will be realized.
- 2.7M dollars geothermal
- 2.3M dollars boilers and chiller centralization.

## ESPC Phase II

- 1.3M dollars building automation
- 350K dollars lighting improvements
- 17K dollars pool leak repair
- 280K development costs
- 513K dollars Trane equipment
- 200K dollars extended warranty
- 7.7M total dollar implementation price
- Looking at funding \$2.7M dollars out of MRP funds.

## CONTACT INFORMATION

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